Microsoft

.net developer training

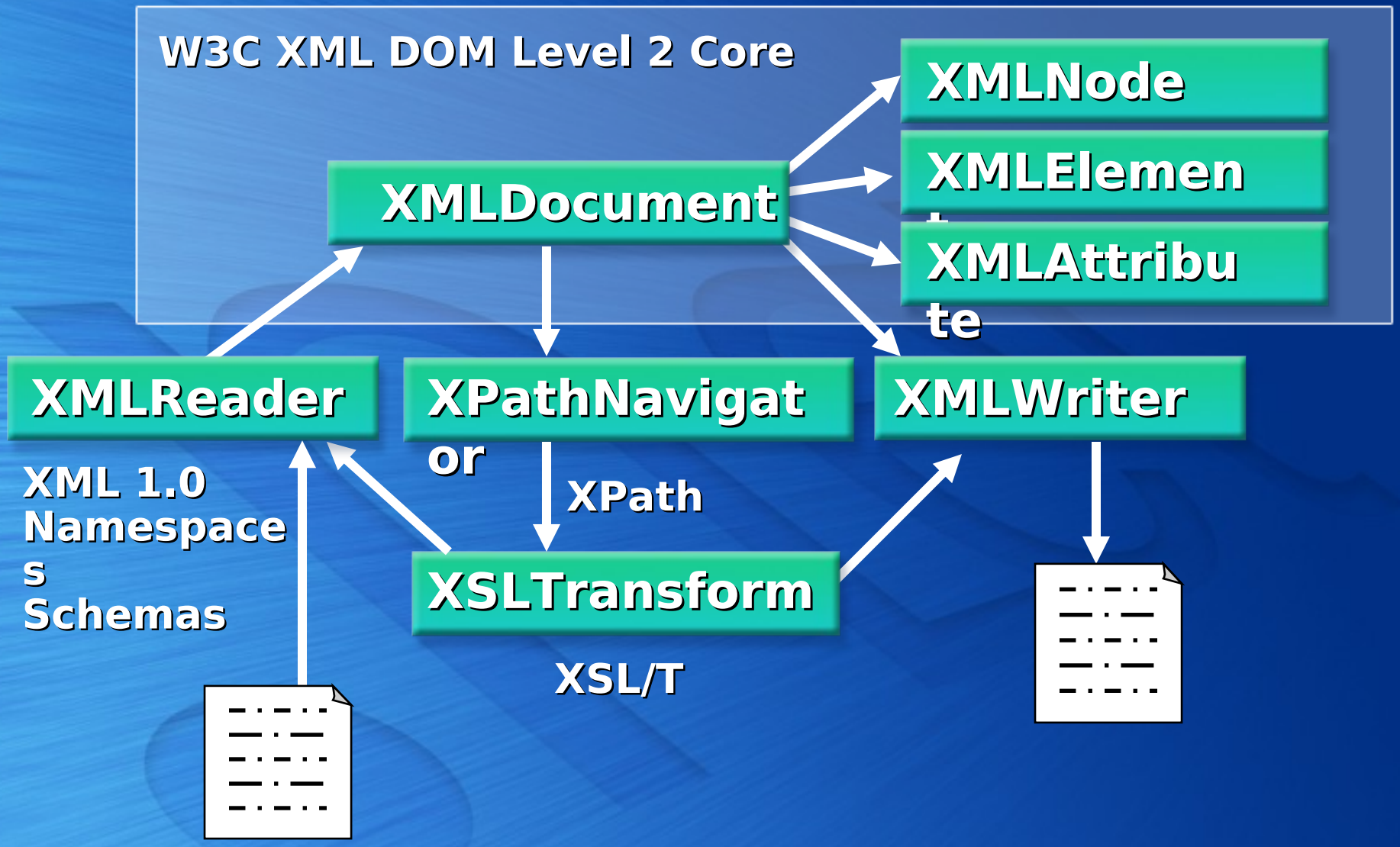
Create XML Web Services and Applications with Visual Studio .NET

Using XML In .NET

Module 09: Agenda

- Parsing XML
  - XMLReader and XMLWriter
  - XML document
- Navigating XML
  - XPathNavigator
- Data and XML
  - Managed Data Overview
  - ADO .NET and XML
  - Accessing XML documents as relational data
  - Accessing relational data as XML

XML .NET Architecture



XML Parsing
Demo

- XML Parsing
- **Show basics of parsing an XML document**

XMLReader And XMLWriter

- XMLReader
  - Pull model interface
  - Cursor over forward only stream
  - Parse time validation
  - XMLTextReader, XMLNodeReader Implementations
- XMLWriter
  - Helps generate well formed XML output
  - Helps with namespaces
  - XMLTextWriter implementation

XMLReader

Demo

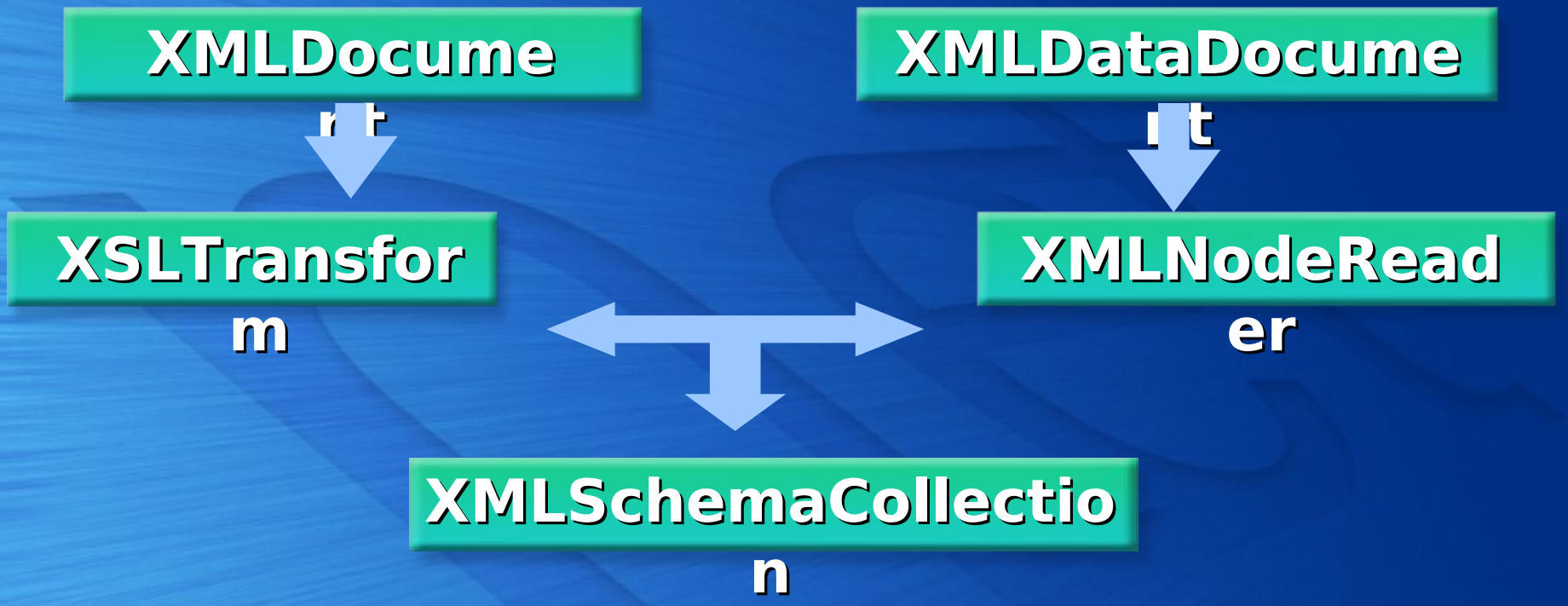
- XMLReader
- Show reading XML from URL

XMLDocument

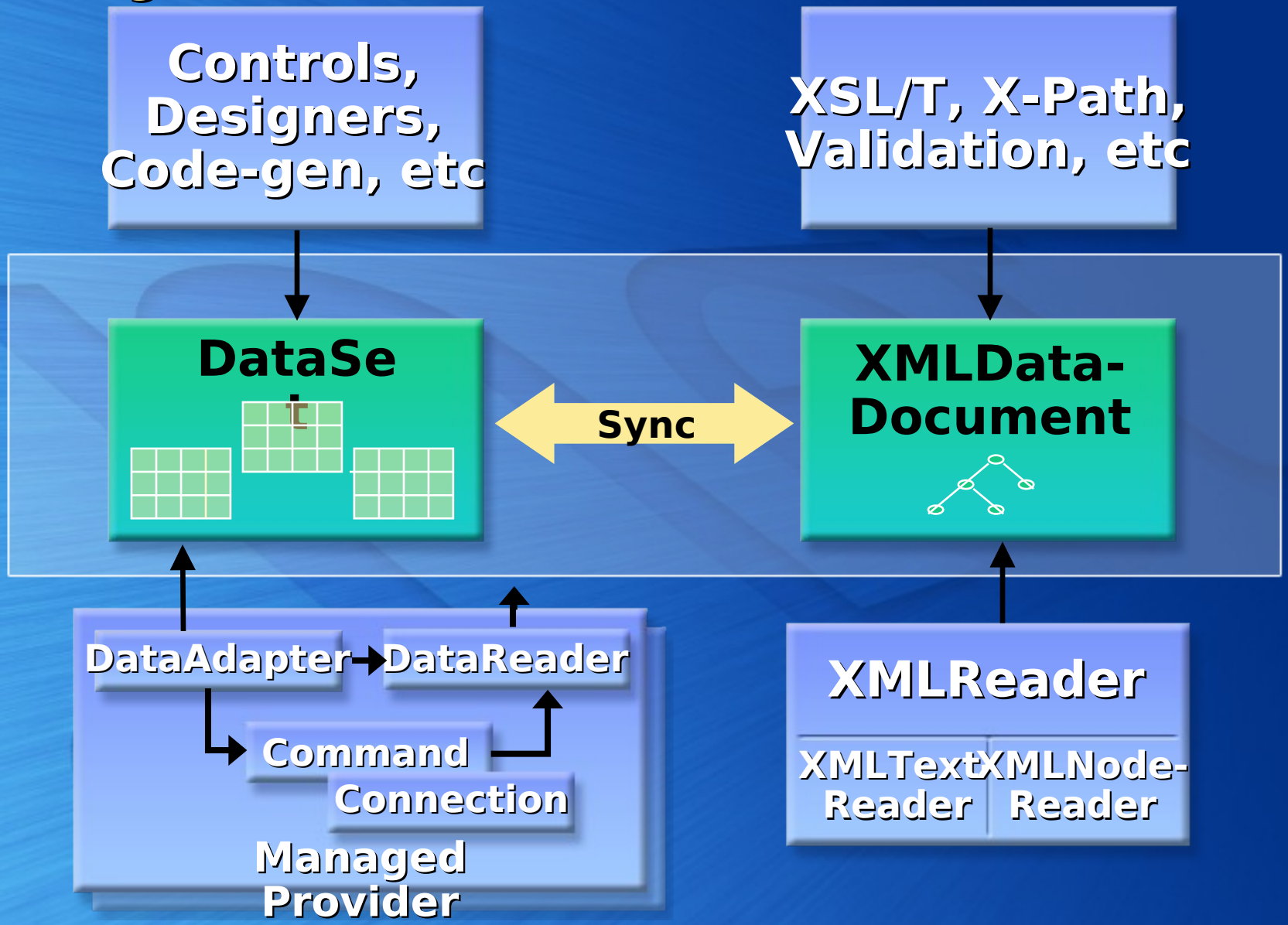
- Some proprietary extensions – Load(), Save() and event handling
- InnerXML properties build a subtree for you

  node.InnerXML = "<Person><Name>Mark</Name><Email>mfussell@microsoft.com</Email></Person>”

Navigating XML
XPathNavigator



Data and XML
Managed Data Overview



ADO .NET And XML

- Natural evolution of ADO and MSXML
- Fully integrated
- DataSet and XMLDataDocument are key components
- An XML data set can be presented as an XML document and vice versa

ADO .NET And XML

- DataSet
  - Loads/saves XML data into/out of DataSet
  - Schema can be loaded/saved as XSD
  - Schema can be inferred from XML Data
- DataSet with XMLDataDocument
  - Exposes relational view over structured XML
    - According to the DataSet Schema
  - Allows strong typing, control binding and relational access of XML data
  - Allows XML tools (schema validation, XSL/T, XPath queries) against relational data

DataSet With XML Sources

- Load DataSet with XML
  - ReadXML method (and more)
  - Open as relational data
- Saving DataSet as XML
  - WriteXML method

Schema Inference

- Schema can be inferred from data
  - When no schema is defined when you call DataSet.ReadXML()
- General rules
  - Element becomes table if:
    - It repeats or contains more than simple content
    - Otherwise, it becomes column
  - Attributes become columns
  - Relations are created for nested table-mapped elements
- Useful for ad hoc binding to data
  - Schema depends on data instance

Mapping XML To Relational

```
<Customers CustomerID="GREAL">
  <Orders>
    <OrderID>10528</OrderID>
    <OrderDetails>
     <ProductID>11</ProductID>
     <UnitPrice>21</UnitPrice>
     <Quantity>3</Quantity>
    <OrderDate>1997-05-
06T00:00:00.0000</OrderDate>00.0000</Ord
  </Orders>
  <ContactName>Howard
Snyder</ContactName>
  <Address>2732 Baker Blvd.</Address>
  <City>Eugene</City>
  <Region>OR</Region>
  <PostalCode>97403</PostalCode>
</Customers>
</Customers>
<Products
```

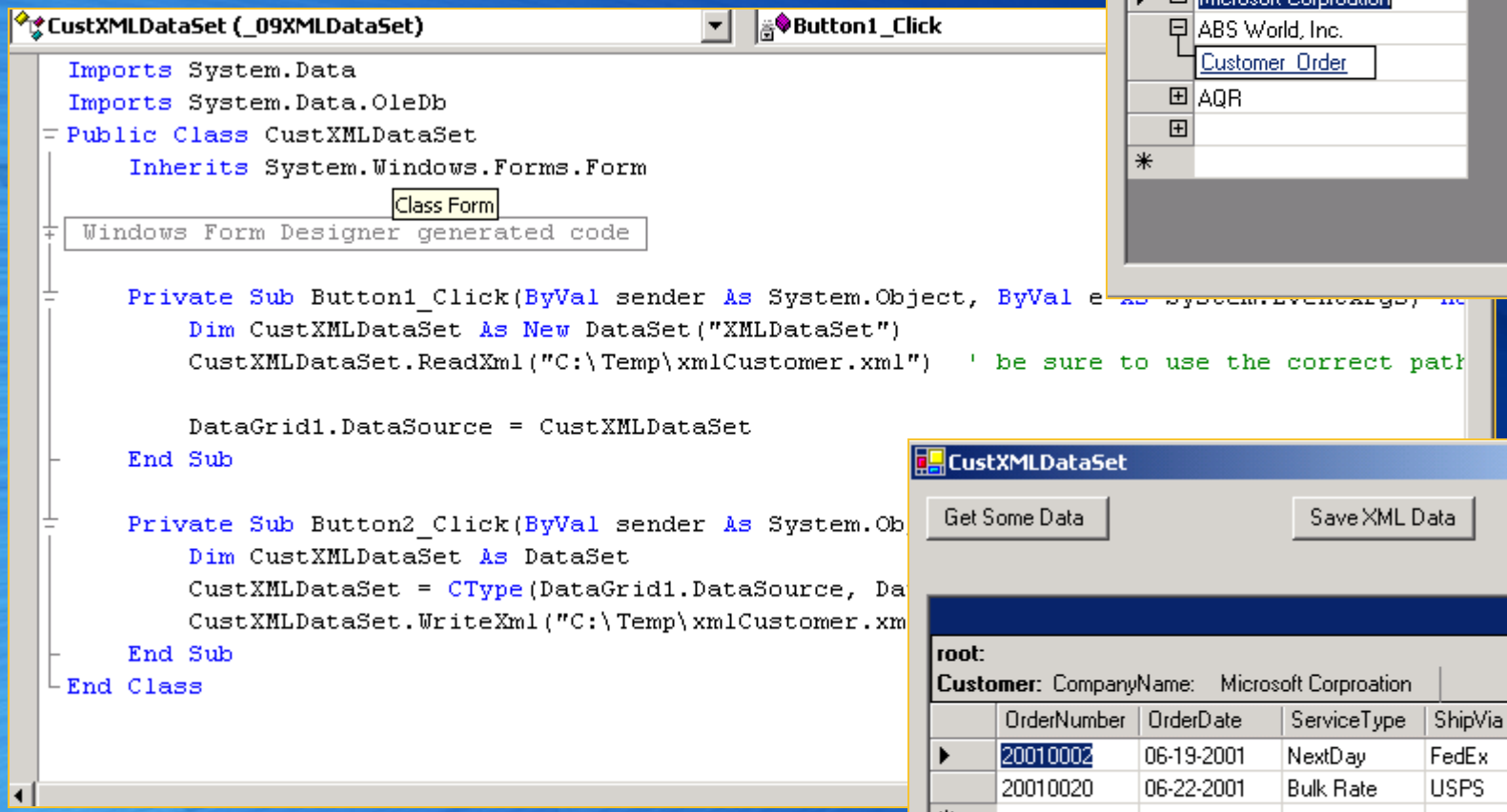
Nested Orders Table

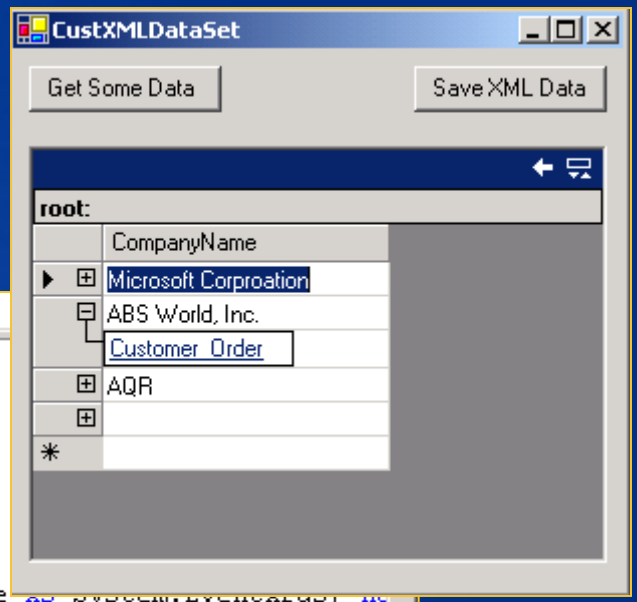
Customers Table

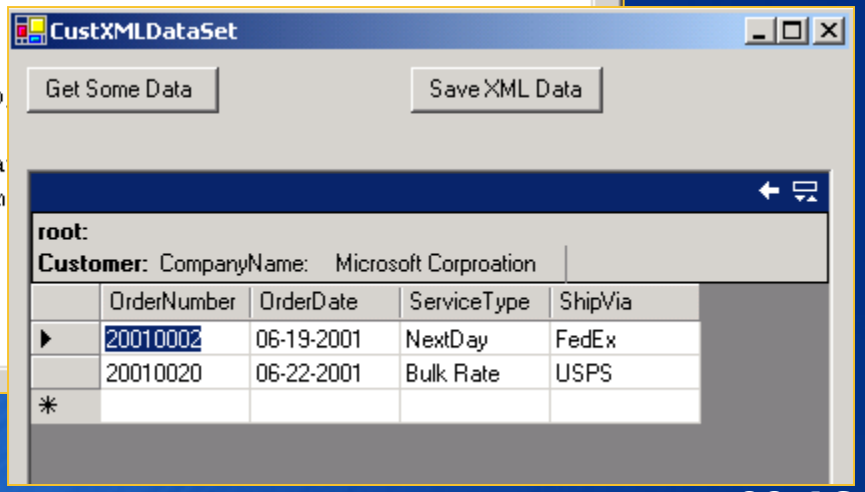
Products Table

XML And DataSets
Demo

- XML and DataSets







XML Relational Data

- XMLDataDocument
  - SQL XML
    - XML streamed from SQL Server™
    - Support for UpdateGrams

XMLDataDocument

- A DataSet can be associated with an XMLDataDocument
  - Exposes a relational view over structured XML
  - Preserves full fidelity of XML document
  - Simultaneously exposes data relationally or as XML
    - Semi-structured data
    - Multiple tools on same data synchronized hierarchical/relational view
- Mapping is based on W3C XSD schemas
- Provides efficient connection of relational data to XSLTransform

Summary

- .NET and XML
  - Objects and features make working with XML easy
  - XML is used under the hood by many objects (such as the DataSet)
  - DataSet provides relational view
    - Persists/loads data as XML
    - Persists/loads schema as XSD
    - Serializes as XML with in-line schema
  - XMLDataDocument provides an XML view
    - Exposes relational data to XML tools
    - Exposes a relational subset of XML data
    - Preserves fidelity of XML

Resources

- The Extensible Markup Language (XML) is the universal format for structured documents and data on the Web; for more information: http://www.w3.org/xml/

In-Depth Training on XML
Direct from Microsoft

- 2500A: Introduction to Programming in XML
  - Available late 2001
- 1905: Building XML-Based Web Applications
  - Note: Uses Visual Studio 6.0
- 1913A: Exchanging and Transforming Data Using XML and XSLT
  - Note: Uses Visual Studio 6.0
- 2091A: Building XML-Enabled Applications Using Microsoft SQL Server 2000

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